

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A drum type washing machine comprising:
 - a tub of plastic having a wall for holding washing water therein and mounting a driving part ~~thereon~~thereon, wherein at least a portion of a tub rear wall having an inner surface and an outer surface;
 - a drum rotatably arranged inside of the tub;
 - a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
 - at least one bearing for supporting the shaft;
 - a bearing housing having a sleeve form of bearing supporting part, and a stator fastening part extended in a radial direction from the bearing supporting part, wherein both of the bearing supporting part and the stator fastening part are ~~inserted in a~~disposed between the inner surface and the outer surface of the tub rear wall, while stator fastening holes in the stator fastening part are exposed;
 - a rotor engaged to a rear end part of the shaft to form the motor together with the stator; and the stator mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor,
 - wherein the stator includes;
 - an annular helical type core having multiple layers formed by winding a steel plate having tooth portions and a base part in a helix starting from a bottom layer to a top layer,

an insulator having the helical type core encapsulated therein,
a coil wound on the tooth portions, and
fastening parts formed with the insulator, wherein fastening holes are at portions
of the fastening parts projected toward an inside of the helical type core for
fastening the stator to the bearing housing.

2. (Original) The drum type washing machine as claimed in claim 1, wherein the
fastening part has a height greater than 20% of a total stack height of the helical type core.

3. (Original) The drum type washing machine as claimed in claim 1, wherein the
fastening hole in the fastening part has a spring pin.

4. (Currently Amended) A drum type washing machine comprising:
a tub of plastic having a wall for holding washing water therein and mounting a driving
part ~~thereon~~thereon, wherein at least a portion of a tub rear wall having an inner surface and an
outer surface;

a drum rotatably arranged inside of the tub;
a shaft passed through the tub and connected to the drum for transmission of a driving
power from a motor to the drum;
at least one bearing for supporting the shaft;
a bearing housing having a sleeve form of bearing supporting part, and a stator fastening
part extended in a radial direction from the bearing supporting part, wherein both of the bearing
supporting part and the stator fastening part are ~~inserted in a~~disposed between the inner surface

and the outer surface of the tub rear wall, while stator fastening holes in the stator fastening part are exposed;

a rotor engaged to a rear end part of the shaft to form the motor together with the stator; and the stator mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor, wherein the stator includes;

an annular helical type core having multiple layers formed by winding a steel plate having tooth portions and a base part in a helix starting from a bottom layer to a top layer, an insulator having the helical type core encapsulated therein, a coil wound on the tooth portions, and fastening parts, formed with the insulator, having three or more than three fastening holes at portions of the fastening parts projected toward an inside of the helical type core for fastening the stator to the bearing housing.

5. (Original) The drum type washing machine as claimed in claim 4, wherein the fastening part has a height greater than 20% of a total stack height of the helical type core.

6. (Original) The drum type washing machine as claimed in claim 4, wherein the fastening hole in the fastening part has a spring pin.

7. (Currently Amended) A drum type washing machine comprising:
a tub of a plastic having a wall for holding washing water therein and mounting a driving part ~~thereon~~ thereon, wherein at least a portion of the tub having an inner surface and an outer surface;

a drum rotatably arranged inside of the tub;

a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;

at least one bearing for supporting the shaft;

a bearing housing having a sleeve form of bearing supporting part inserted in the tub rear wall, and a stator fastening part formed as a unit with the bearing supporting part extended from the bearing supporting part, the bearing supporting part and the stator fastening part disposed between the inner surface and the outer surface of the tub, a part of the stator fastening part exposed to an outside of the tub, with stator fastening holes formed in ~~an~~the exposed part of the stator fastening part;

a rotor engaged to a rear end part of the shaft to form the motor together with the stator; and the stator mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor, wherein the stator includes;

an annular helical type core having multiple layers formed by winding a steel plate having tooth portions and a base part in a helix starting from a bottom layer to a top layer,

an insulator having the helical type core encapsulated therein,

a coil wound on the tooth portions, and

fastening parts, formed with the insulator, having fastening holes at portions of the fastening parts projected toward an inside of the helical type core for fastening the stator to the bearing housing.

8. (Original) The drum type washing machine as claimed in claim 7, wherein the fastening part has a height greater than 20% of a total stack height of the helical type core.

9. (Original) The drum type washing machine as claimed in claim 7, wherein the fastening hole in the fastening part has a spring pin.

10. (Original) The drum type washing machine as claimed in claim 7, wherein the fastening hole in the fastening part has a metal tube press fit therein.

11. (Currently Amended) A drum type washing machine comprising:
a tub of a plastic having a wall for holding washing water therein and mounting a driving part thereon, wherein at least a portion of the tub having an inner surface and an outer surface;
a drum rotatably arranged inside of the tub;
a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
at least one bearing for supporting the shaft;
a bearing housing having a sleeve form of bearing supporting part inserted in the tub rear wall, and a stator fastening part formed as a unit with the bearing supporting part extended in a radial direction from the bearing supporting part, the bearing supporting part and the stator fastening part disposed between the inner surface and the outer surface of the tub, a part of the stator fastening part exposed to an outside of the tub, with stator fastening holes formed in ~~an~~ the exposed part of the stator fastening part;
a rotor engaged to a rear end part of the shaft to form the motor together with the stator;
and the stator mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor, wherein the stator includes;

an annular helical type core having multiple layers formed by winding a steel plate having tooth portions and a base part in a helix starting from a bottom layer to a top layer, an insulator having the helical type core encapsulated therein, a coil wound on the tooth portions, and fastening parts, formed as a unit with the insulator, having three or more than three fastening holes at portions of the fastening parts projected toward an inside of the helical type core for fastening the stator to the bearing housing.

12. (Original) The drum type washing machine as claimed in claim 11, wherein the fastening part has a height greater than 20% of a total stack height of the helical type core.

13. (Original) The drum type washing machine as claimed in claim 11, wherein the fastening hole in the fastening part has a spring pin.

14. (Original) The drum type washing machine as claimed in claim 11, wherein the fastening hole in the fastening part has a metal tube press fit therein.

15. (Currently Amended) A drum type washing machine comprising:
a tub of plastic having a wall for holding washing water therein and mounting a driving part ~~thereon~~ thereon, wherein at least a portion of a tub rear wall having an inner surface and an outer surface;

a drum rotatably arranged inside of the tub;
a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;

at least one bearing for supporting the shaft;

a bearing housing having a sleeve form of bearing supporting part, and a stator fastening part extended in a radial direction from the bearing supporting part, wherein both of the bearing supporting part and the stator fastening part are ~~inserted in~~ disposed between the inner surface and the outer surface of the tub rear wall, while stator fastening holes in the stator fastening part are exposed;

a rotor engaged to a rear end part of the shaft to form the motor together with the stator; and the stator mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor.

16. (Previously Presented) The drum type washing machine as claimed in claim 15, wherein the stator includes:

a core, an insulator having the core encapsulated therein,

a coil wound on tooth portions, and fastening parts formed with the insulator, having fastening holes projected toward an inside of the core for fastening the stator to the bearing housing.

17. (Previously Presented) The drum type washing machine as claimed in claim 15, wherein the stator includes:

a core having a helical wound stack,

an insulator of an insulating material having the core encapsulated therein,

a coil wound on tooth portions of the helical core, and three or more than three fastening parts formed as a unit with the insulator, projected toward an inside of the core.

18. (Original) The drum type washing machine as claimed in claim 15, wherein the stator fastening part of the bearing housing includes an extension in an outward radial direction from the cylindrical bearing supporting part, having steps along the radial direction at preset intervals.

19. (Original) The drum type washing machine as claimed in claim 15, wherein the stator fastening part includes alternate outward radial direction extensions from front part, and rear part of the cylindrical bearing supporting part in a circumferential direction connected at edges of the extensions substantially perpendicular to the extensions.

20. (Original) The drum type washing machine as claimed in claim 15, wherein the stator fastening part includes alternate outward radial direction extensions from front part, and rear part of the cylindrical bearing supporting part in a circumferential direction connected at edges of the extensions substantially perpendicular to the extensions, the extension having steps at preset intervals along the radial direction.

21. (Original) The drum type washing machine as claimed in claim 15, further comprising a positioning hole adjacent to the stator fastening hole in the stator fastening part in correspondence to the positioning pin on the stator.

22. (Original) The drum type washing machine as claimed in claim 15, wherein the tub rear wall includes bosses at parts of the tub rear wall opposite to the stator fastening holes for preventing the stator fastening part from coming into direct contact with the stator, thereby

preventing the insulator of the stator from being broken due to a fastening force applied thereto in mounting the stator.

Claims 23 - 25 (Canceled)

26. (Original) The drum type washing machine as claimed in claim 15, wherein the stator fastening part includes a plurality of radial direction outward extensions from the cylindrical bearing supporting part separated at regular intervals in a circumferential direction to form a plurality of separated radial segments.

27. (Currently Amended) A drum type washing machine comprising:
a tub of plastic having a wall for holding washing water therein and mounting a driving part thereon;
a drum rotatably arranged inside of the tub;
a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
at least one bearing for supporting the shaft;
a bearing housing having a sleeve form of bearing supporting part inserted in the tub rear wall, and a stator fastening part formed as a unit with the bearing supporting part extended in a radial direction from the bearing supporting part, the bearing supporting part and the stator fastening part disposed between an inner surface and an outer surface of the tub, a part of the stator fastening part exposed to an outside of the tub, with stator fastening holes formed in ~~an~~the exposed part;

a rotor engaged to a rear end part of the shaft to form the motor together with the stator;
and

the stator with a weight heavier than 1.5 kg mounted on the stator fastening part of the bearing housing with fastening members on an inner side of the rotor to form the motor together with the rotor.

28. (Original) The drum type washing machine as claimed in claim 27, wherein the stator fastening part includes a plurality of radial direction outward extensions from the cylindrical bearing supporting part separated at regular intervals in a circumferential direction to form a plurality of separated radial segments.

29. (Previously Presented) The drum type washing machine as claimed in claim 27, further comprising a positioning hole adjacent to the stator fastening hole in the stator fastening part in correspondence to the positioning pin on the stator.

Claims 30-31 (Canceled)

32. (Previously Presented) The drum type washing machine as claimed in claim 27, wherein the stator includes a core, an insulator having the core encapsulated therein, a coil wound on tooth portions, and fastening parts formed as a unit with the insulator, having fastening holes projected toward an inside of the core for fastening the stator to the bearing housing.

33. (Previously Presented) The drum type washing machine as claimed in claim 27, wherein the stator includes a core having a helical wound stack, an insulator of an insulating

material having the core encapsulated therein, a coil wound on tooth portions of the helical core, and three or more than three fastening parts formed as a unit with the insulator, projected toward an inside of the core.

34. (Previously Presented) The drum type washing machine as claimed in claim 33, wherein the helical type core includes: multiple layers formed by winding in a helix starting from a bottom layer to a top layer, tooth portions projected outwardly in a radial direction from a base part, and recesses in the base part for reducing stress in the winding of the helical type core.

35. (Previously Presented) The drum type washing machine as claimed in claim 34, wherein the helical type core includes rivets passed through holes in the base part for fastening the layers, respectively.

36. (Original) The drum type washing machine as claimed in claim 33, wherein the helical type core includes; welded parts of the layer with the base part at the bottom layer and the top layer where the winding starts and ends respectively.

37. (Original) The drum type washing machine as claimed in claim 34, wherein the recess is rectangular, or trapezoidal.

38. (Currently Amended) A drum type washing machine comprising:
a tub having a wall for holding washing water therein and mounting a driving part thereon, and a sleeve form of bearing supporting part for supporting bearings, in which both the tub and the bearing supporting part are formed as one unit;

a drum rotatably arranged inside of the tub;
a shaft passed through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
at least one bearing inside of the bearing supporting part for supporting the shaft;
a rotor engaged to a rear end part of the shaft to form the motor together with a stator;
and the stator mounted on the tub on an inner side of the rotor and an outer side of the bearing supporting part with fastening members, wherein the stator includes
an annular helical type core having multiple layers formed by winding a steel plate having tooth portions and base part in a helix starting from a bottom layer to a top layer,
an insulator having the helical type core encapsulated therein,
a coil wound on the tooth portions, and
fastening parts formed with the insulator, having fastening holes at portions of the fastening parts projected toward an inside of the helical type ~~core~~core, and
fasteners for fastening the stator to the bearing housing via the fastening holes.

39. (Original) The drum type washing machine as claimed in claim 38, wherein the tub includes a metal tub supporting plate built-in an outer region of the bearing supporting part formed as a separate piece from the bearing supporting part.

40. (Original) The drum type washing machine as claimed in claim 39, wherein the tub is injection molded in a state the tub supporting plate is buried in the tub.

41. (New) A washing machine comprising:

a tub made of plastic and storing washing water therein;

- a drum rotatably installed in the tub;
- a shaft passing through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
- at least one bearing for supporting the shaft;
- a bearing housing having a bearing supporting part and a stator fastening part extended in a radial direction from the bearing supporting part, wherein the tub has an inner surface and an outer surface, and the bearing supporting part and the stator fastening part are disposed between the inner surface and the outer surface of the tub;
- a rotor coupled to a rear end part of the shaft; and
- a stator disposed within the rotor and mounted on the stator fastening part of the bearing housing to form the motor together with the rotor.

42. (New) A washing machine comprising:

- a tub made of plastic and storing washing water therein;
- a drum rotatably installed in the tub;
- a shaft passing through the tub and connected to the drum for transmission of a driving power from a motor to the drum;
- at least one bearing for supporting the shaft;
- a bearing housing having a bearing supporting part and a stator fastening part extended in a radial direction from the bearing supporting part, wherein the bearing supporting part and the stator fastening part are inserted into a tub rear wall;
- a rotor coupled to a rear end part of the shaft; and
- a stator disposed within the rotor and mounted on the stator fastening part of the bearing housing to form the motor together with the rotor, wherein the stator includes;

a core,

an insulator encapsulating the core,

fastening parts formed with the insulator and having fastening holes, wherein fasteners fasten the stator to the stator fastening part via the fastening holes.

43. (New) A washing machine comprising:

a tub made of plastic and storing washing water therein;

a drum rotatably installed in the tub;

a shaft passing through the tub and connected to the drum for transmission of a driving power from a motor to the drum;

at least one bearing for supporting the shaft;

a rotor coupled to a rear end part of the shaft;

a stator disposed within the rotor and to form the motor together with the rotor;

a bearing housing having a bearing supporting part and a stator fastening part extended in a radial direction from the bearing supporting part, wherein the bearing supporting part and the stator fastening part are inserted into a tub rear wall, and an inserted portion of the stator fastening part is directly coupled to the stator.

44. (New) The washing machine as claimed in claim 43, wherein the bearing supporting part and the stator fastening part are buried in a tub rear wall.

45. (New) The washing machine as claimed in claim 43, wherein the bearing supporting part and the stator fastening part are embedded in a tub rear wall.

46. (New) The washing machine as claimed in claim 43, wherein the bearing supporting part and the stator fastening part are entirely enclosed by a tub rear wall.

47. (New) The washing machine as claimed in claim 43, wherein upper surfaces of the bearing supporting part and the stator fastening part are covered by a tub rear wall.

48. (New) The washing machine as claimed in claim 43, wherein the bearing supporting part and the stator fastening part are inserted into a tub rear wall such that the stator fastening part is not exposed from the tub.

49. (New) The washing machine as claimed in claim 43, wherein the stator fastening part has at least one stator fastening hole and only the at least one stator fastening hole is exposed from the tub.

50. (New) The washing machine as claimed in claim 43, wherein the stator fastening part is formed from one piece of material.

51 (New) A washing machine comprising:

a tub made of plastic and storing washing water therein;

a drum rotatably installed in the tub;

a shaft passing through the tub and connected to the drum for transmission of a driving power from a motor to the drum;

at least one bearing for supporting the shaft;

a bearing housing having a bearing supporting part and a stator fastening part extended in a radial direction from the bearing supporting part, wherein the bearing supporting part and the stator fastening part are buried in a tub rear wall;

a rotor coupled to a rear end part of the shaft; and

a stator disposed within the rotor and mounted on the stator fastening part of the bearing housing.

52. (New) The washing machine as claimed in claim 51, wherein the bearing supporting part and the stator fastening part are embedded in the tub rear wall.

53. (New) The washing machine as claimed in claim 51, wherein the bearing supporting part and the stator fastening part are entirely enclosed by the tub rear wall.

54. (New) The washing machine as claimed in claim 51, wherein upper surfaces of the bearing supporting part and the stator fastening part are covered by the tub rear wall.

55. (New) The washing machine as claimed in claim 51, wherein the bearing supporting part and the stator fastening part are inserted into the tub rear wall so as not to be exposed from the tub.

56. (New) The washing machine as claimed in claim 51, wherein the stator fastening part has at least one stator fastening hole and only the at least one stator fastening hole is exposed from the tub.

57. (New) The washing machine as claimed in claim 51, wherein the stator includes;

a core;

an insulator made of an electric insulating material and encapsulating the core; and fastening parts formed with the insulator and having fastening holes.

58. (New) The washing machine as claimed in claim 57, wherein fasteners fasten the stator to the stator fastening part via the fastening holes.

59. (New) The washing machine as claimed in claim 51, wherein the stator fastening part includes at least one step.

60. (New) The washing machine as claimed in claim 51, wherein the stator fastening part has steps formed along a circumferential direction.

61. (New) The washing machine as claimed in claim 51, wherein the stator fastening part has steps formed along a radial direction.

62. (New) The washing machine as claimed in claim 51, wherein the stator fastening part includes recesses extending in a radial direction.

63. (New) The washing machine as claimed in claim 62, wherein each of the recesses is formed by bending a portion of the stator fastening part.

64. (New) The washing machine as claimed in claim 62, wherein the stator fastening part has steps formed along a radial direction.

65. (New) The washing machine as claimed in claim 51, wherein the stator fastening part includes a plurality of first and second extensions extending in a radial direction from the bearing supporting part, and wherein the first and second extensions are arranged alternately along a circumferential direction.

66. (New) The washing machine as claimed in claim 65, wherein the second extensions are disposed in front of the first extensions.

67. (New) The washing machine as claimed in claim 65, wherein the first extensions are provided around a rear part of the bearing supporting part and the second extensions are provided around a front part of the bearing supporting part.

68. (New) The washing machine as claimed in claim 65, wherein the stator fastening part further includes a plurality of third extension each connecting the adjacent the first and second extensions.

69. (New) The washing machine as claimed in claim 65, wherein each of the first extension has steps formed along a radial direction.

70. (New) The washing machine as claimed in claim 51, wherein the stator fastening part includes a plurality of extensions extending in a radial direction from the bearing supporting part.

71. (New) The washing machine as claimed in claim 70, wherein the extensions has steps formed along a radial direction.

72. (New) The washing machine as claimed in claim 70, wherein the adjacent extensions are connected with each other.

73. (New) The washing machine as claimed in claim 51, wherein the tub rear wall includes a boss formed around a stator fastening hole of the stator fastening part for preventing the tub rear wall from coming into direct contact with the stator.

74. (New) The washing machine as claimed in claim 51, wherein the stator fastening part includes a rib formed thereon for increasing a bonding force with plastic of the injection molding of the tub.

75. (New) The washing machine as claimed in claim 74, wherein the rib is formed along a circumferential direction and wherein the rib has fastening bosses each with the stator fastening hole formed therein.

76. (New) The washing machine as claimed in claim 51, further comprising a positioning part provided at the stator and the stator fastening part to position the stator when the stator is coupled to the stator fastening part in order to secure concentricity of the stator.

77. (New) The washing machine as claimed in claim 76, wherein the positioning part includes;

a positioning hole provided at any one of the stator and the stator fastening part, and

a positioning protrusion provided at the other of the stator and the stator fastening part, wherein the positioning protrusion is configured to be inserted into the positioning hole.

78. (New) The washing machine as claimed in claim 76, wherein the positioning part includes a positioning hole provided at the stator fastening part, and a positioning protrusion provided at the stator, wherein the positioning protrusion is configured to be inserted into the positioning hole.

79. (New) The washing machine as claimed in claim 78, wherein the positioning hole is disposed adjacent to a stator fastening hole in the stator fastening part.

80. (New) The washing machine as claimed in claim 51, wherein the bearing housing is formed as one body with the tub.

81. (New) The washing machine as claimed in claim 51, wherein the bearing housing is insert injection molded into the rear wall of the tub.

82. (New) The washing machine as claimed in claim 51, wherein the stator fastening part is formed as one body with the bearing supporting part.